OWNER'S MANUAL

POCKET BLENDER®

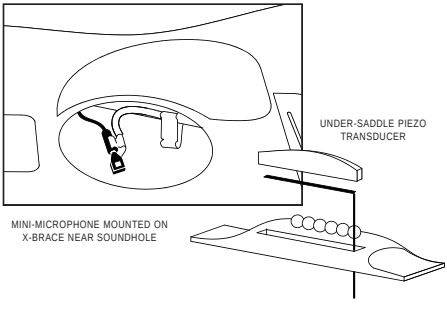
ACOUSTIC INSTRUMENT PREAMP

INTRODUCTION: THE BLENDER SYSTEM

Thank you for your purchase of a Fishman product. Please read these instructions carefully. If you have any questions, feel free to call our product information line at (978) 988-9665.

The POCKET BLENDER is a compact, 2-channel preamp that addresses the specific needs of acoustic stringed instrument players. The BLENDER System combines the sounds from a pickup and an instrument-mounted mini-microphone.

1) MICROPHONE and PICKUP: A microphone alone is capable of capturing the natural ambience and resonance of an acoustic stringed instrument. A single piezo pickup delivers a clear, balanced, high-output signal with low feedback. Combining the two sounds results in tone quality and projection in which the sum is greater than the parts. Before the BLENDER System, there was no simple and practical means to combine a microphone and pickup for the performing acoustic musician.



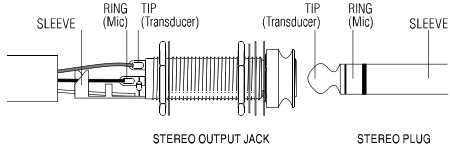
The mini-microphone is conveniently positioned on the instrument with a mounting clip specifically designed for the application. This allows you the unique opportunity of having a permanent microphone setup, precisely at the instrument's "sweet spot". The advantages of this are clear - especially to anyone who has ever had to set up a microphone without a sound check - five minutes before the gig! With the BLENDER System, you can now arrive at the gig, take your mic'ed instrument out of its case, plug in and play with complete freedom of movement.

2) STEREO INSTRUMENT CABLE: The microphone and pickup signals are fed into a stereo output jack (also called TRS or TIP / RING / SLEEVE) that is mounted on the instrument. The two signals are then routed through a stereo instrument cable (again, TRS) to the INPUT jack on the POCKET BLENDER. The POCKET BLENDER in turn provides low voltage phantom power to the mini-microphone through the same cable.

With pickup and microphone wired to TIP and RING respectively, and your instrument connected by a stereo instrument cable to the POCKET BLENDER'S INPUT jack, the pickup is controlled by the TRANSDUCER channel, and the microphone is controlled by the MICROPHONE channel.

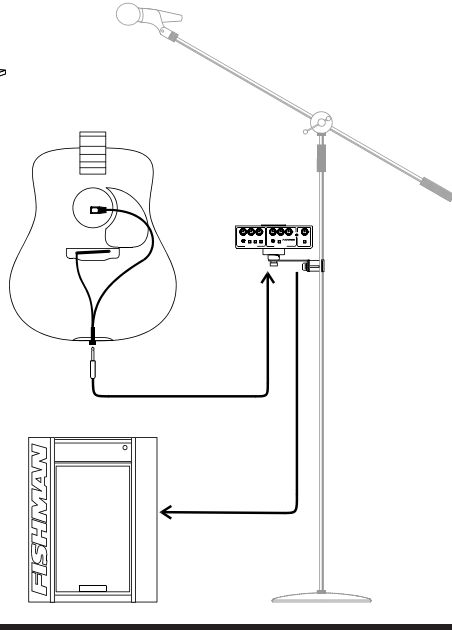
(See pages 13-14 for more information on Suggested Input Options)

By consolidating the two signals plus phantom power, you save both setup time and aggravation. The stereo instrument cable provides a simple solution to the hassle of multiple cable runs and outboard phantom power supplies.



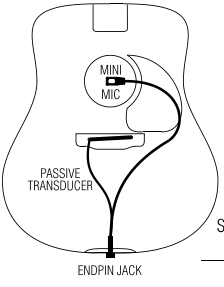
3) THE POCKET BLENDER: The POCKET BLENDER is the brain of the system. The signals from the instrument are routed to the MICROPHONE and TRANSDUCER channels. Each channel is optimized for the particular input impedance, level, phase and equalization needs of both microphone and pickup. The two signals are then "blended" together and a composite signal can be sent to amplification, recording, signal processing and/or broadcast gear.

NOTE: If your instrument has an onboard preamp, and you want to route microphone and pickup signals through a stereo instrument cable, you may need to install a Fishman SMART SWITCH for the system to operate.

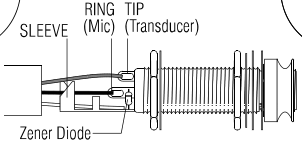


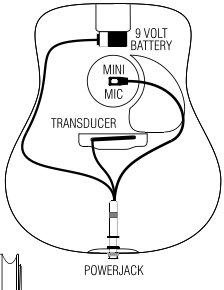
PREPARING YOUR INSTRUMENT

Before you begin using your Pocket Blender, you will need to have a pickup and microphone in place on your instrument.
Here are four common scenarios:

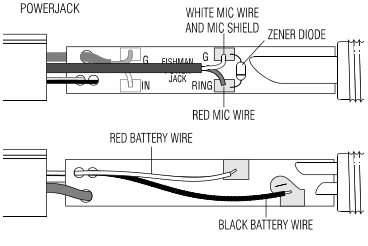


PASSIVE PICKUP AND MICROPHONE:
If your instrument has a passive piezo pickup, it's easy to connect it and a microphone to the same stereo endpin jack. Connect the pickup to tip, and the microphone to ring.

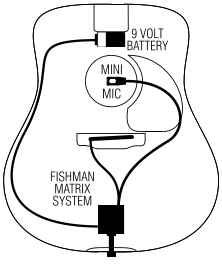


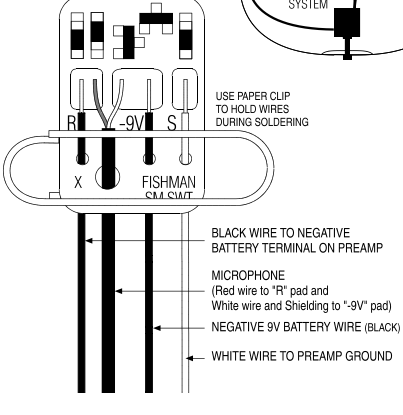


PICKUP WITH POWERJACK AND MICROPHONE:
If your instrument has a piezo or magnetic pickup and a Fishman Powerjack, connect a microphone to the ring by soldering it to the appropriate terminal on the Powerjack circuit board.



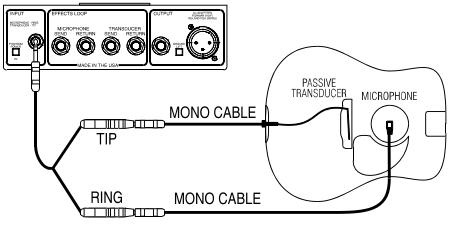
ACTIVE PICKUP AND MICROPHONE:
If your instrument has an active piezo pickup - such as the Fishman Acoustic Matrix - you will need a Fishman Smart Switch to connect a microphone to the stereo endpin jack for the system to operate. See Page 23





PICKUP AND MICROPHONE WITH SEPARATE MONO INSTRUMENT CABLES:

You may choose to route the pickup and microphone through two separate mono instrument cables. You will need a stereo "Y" cable (available from Fishman).



WARNING: INSTALLATION BY A QUALIFIED PROFESSIONAL REPAIRMAN IS STRONGLY RECOMMENDED.
FISHMAN TRANSDUCERS WILL NOT BE RESPONSIBLE FOR ANY DAMAGES TO YOUR INSTRUMENT DUE TO IMPROPER INSTALLATION.

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QUICK START

You don't have to read this manual to get up and running, but we recommend that you do in order to get the most out of your POCKET BLENDER.

Here's what you need to do if you want to "plug in and play".

COMPONENTS

1) POCKET BLENDER
2) 9 Volt Alkaline Battery
3) Pickup and mini-microphone connected to a Stereo Jack (TRS = Tip / Ring / Sleeve) See Page 2.
4) Stereo Instrument Cable
5) XLR or 1/4" mono instrument cable.

PROCEDURE

1) Lift the battery compartment lid on top of the POCKET BLENDER and install a fresh 9 Volt alkaline battery. Replace the lid.
2) Connect the stereo cable to the instrument and to the INPUT jack on the POCKET BLENDER.
3) Set all front panel switches to the OUT position. Set the phantom power switch on the rear panel to the IN position. Set both VOLUME controls fully counter-clockwise. Set the MASTER level to 3:00. Set the BASS and TREBLE controls to 12:00.
4) Run a cable from one of the outputs on the rear panel of the POCKET BLENDER to your amp or PA system.
5) With the POCKET BLENDER'S MASTER LEVEL at 3:00, adjust both the MICROPHONE and TRANSDUCER VOLUME controls to approximately the same level.

BATTERY OPERATION

Make note of the following precautions when using the POCKET BLENDER under battery power:

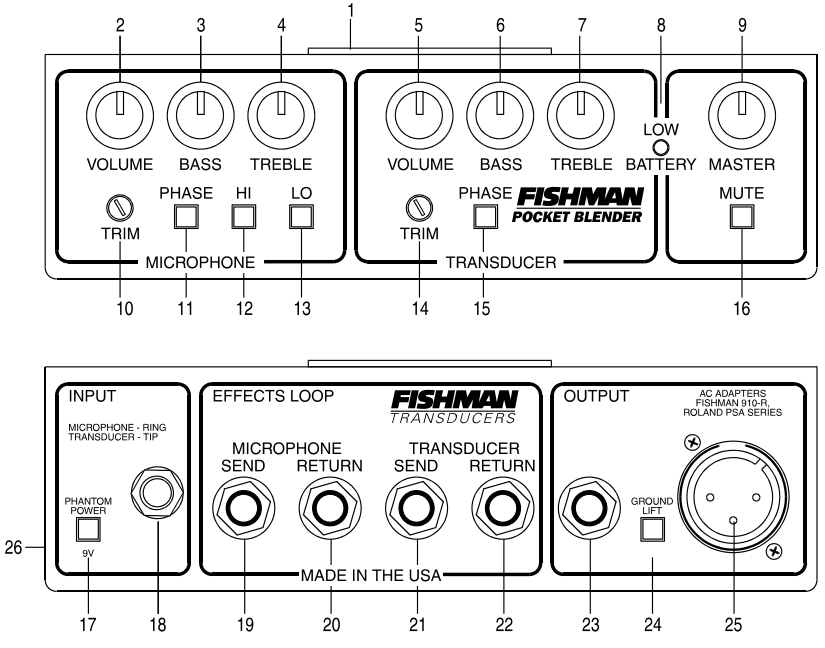
The POCKET BLENDER has no ON/OFF switch. Under battery power, the POCKET BLENDER is turned on only when the STEREO IN jack is plugged in.

Power is always on when using an AC Adapter. See Page 6

To avoid excessive battery drain:

a. Unplug the INPUT jack when the unit is not in use.
b. When using the POCKET BLENDER without a mini-electret microphone, be sure the phantom power is OFF (switch is pushed OUT).

Battery life is an estimated 60 hours continuous use.



FEATURES

FRONT PANEL

1) BATTERY COMPARTMENT (See Page 6)

2) MICROPHONE VOLUME (See Page 7)

3) MICROPHONE BASS CONTROL (See Page 7)

4) MICROPHONE TREBLE CONTROL (See Page 7)

5) TRANSDUCER VOLUME CONTROL (See Page 9)

6) TRANSDUCER BASS CONTROL (See Page 9)

7) TRANSDUCER TREBLE CONTROL (See Page 9)

8) BATTERY LOW LED (See Page 10)

9) MASTER VOLUME CONTROL (See Page 10)

10) MICROPHONE TRIM CONTROL (See Page 7)

11) MICROPHONE PHASE SWITCH (See Page 7)

12) MICROPHONE HI CUT SWITCH (See Page 8)

13) MICROPHONE LO CUT SWITCH (See Page 8)

14) TRANSDUCER TRIM CONTROL (See Page 9)

15) TRANSDUCER PHASE SWITCH (See Page 9)

16) MUTE SWITCH (See Page 10)

REAR PANEL

17) PHANTOM POWER SWITCH (See Page 11)

18) 1/4" INPUT JACK (TRS) (See Pages 6 & 11)

19) MICROPHONE EFFECTS SEND (See Page 11)

20) MICROPHONE EFFECTS RETURN (See Page 11)

21) TRANSDUCER EFFECTS SEND (See Page 11)

22) TRANSDUCERS EFFECTS RETURN (See Page 11)

23) 1/4" UNBALANCED OUTPUT (See Page 12)

24) GROUND LIFT SWITCH (See Page 12)

25) XLR BALANCED OUTPUT (See Page 12)

26) AC ADAPTER INPUT (See Page 6)

POWER

A - BATTERY POWER

Make note of the following precautions when using the POCKET BLENDER under battery power:

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Power is always on when using an AC Adapter

To avoid excessive battery drain:

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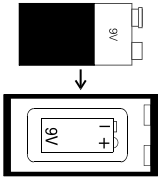
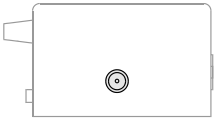
b. When using the POCKET BLENDER without a mini-electret microphone, be sure the phantom power is OFF.



BATTERY COMPARTMENT

To replace the battery, lift the battery compartment lid on the top of the POCKET BLENDER.

B - AC POWER



USE ONLY the Fishman Model-910 or the Roland PSA series Regulated AC Adapters.

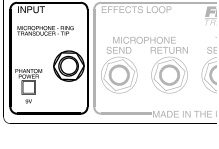
The POCKET BLENDER is turned on at all times when using an AC Adapter.

Use of the AC Adapter will prevent battery drain.

You may daisy-chain your AC Adapter in parallel with other devices as long as the combined current draw does not exceed the milliamp output of the AC Adapter.

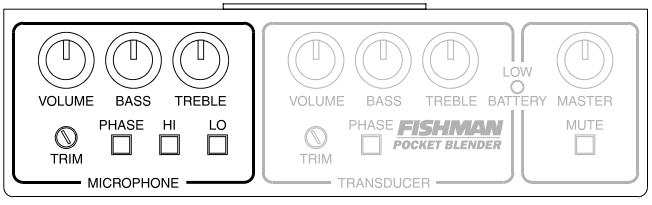
INPUT JACK

The INPUT jack is a TRS (Tip/Ring/Sleeve) input that can accept two discrete signals through a stereo instrument cable.



Two signals from your instrument (For example: Internal Microphone and Pickup) are routed through a stereo instrument cable to the INPUT jack. The Ring goes to the MICROPHONE channel and the Tip goes to the TRANSDUCER channel.

See Page 3.

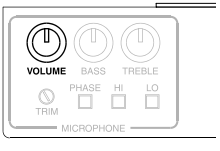


FRONT PANEL

MICROPHONE CHANNEL

VOLUME CONTROL

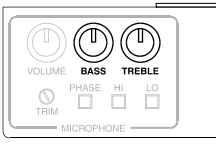
Controls the volume of the MICROPHONE channel.



BASS AND TREBLE CONTROLS

Control the BASS and TREBLE for the MICROPHONE channel.

These are boost/cut shelving tone controls. Setting them at 12:00 yields a flat response.



TRIM CONTROL

Sets the MICROPHONE channel sensitivity for optimum signal strength before clipping.

To attain the best signal to noise ratio, start with the control fully clockwise and play your loudest note or chord. If you hear distortion, lower the control with a small slotted screwdriver until the distortion disappears.

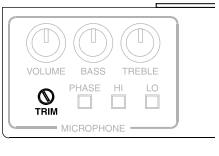
The Trim control can also be used to calibrate the MICROPHONE and TRANSDUCER Volume controls. If there is a disparity between the signal strength of the two channels, use the Trim control to "normalize" the levels.

Try setting the Trim controls this way:

1) Set the Master Volume to 3:00.

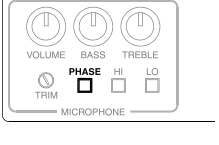
2) Set the MICROPHONE and TRANSDUCER Channel levels to 12:00.

3) Play a note or chord on your instrument and lower the MICROPHONE or TRANSDUCER Trim control until both levels are equal, or are balanced to suit your taste.



PHASE SWITCHES

Compensate for Phase differences that often occur between instrument, microphone, pickup and speaker.



HOW TO USE THE POCKET BLENDER'S PHASE SWITCHES

1. GET THE MICROPHONE PHASE ALIGNED WITH THE SOUND SYSTEM

Determine your position on stage.

Adjust the POCKET BLENDER Master Volume to 3:00 and the TRANSDUCER channel Gain fully counter-clockwise.

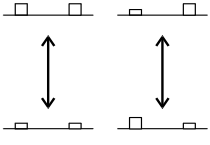
Adjust the MICROPHONE channel Volume to just below the threshold of feedback. Play a sustained note or chord on your instrument while flipping the MICROPHONE channel Phase switch. Listen to and compare each position. Find the Phase switch position that yields the least low frequency (instrument cavity resonance) feedback. If you decide to move more than a few feet from your playing position, you may need to repeat this test.

2. GET THE PICKUP IN PHASE WITH THE MICROPHONE

Having completed part one of this test, raise the TRANSDUCER channel Volume control to suit your taste. Play a sustained note or chord on your instrument while flipping the TRANSDUCER channel Phase switch. Listen to and compare each position. When the pickup and microphone are In Phase, the sound is full with lots of deep bass. When Out of Phase, the sound is thinner with less bottom end.

3. MAKE NOTE OF THE RELATIVE POSITION OF BOTH PHASE SWITCHES

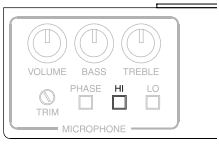
Once you have the POCKET BLENDER Phase aligned, note and memorize the relative position of both Phase switches. They will be either in the same position, or one in and one out.



When you set up in a different venue, the Phase of the house sound system and room acoustics can contribute to different Phase relationships compared to your previous gig. You will also find that the Phase issue depends a lot on the exact performance setting; it tends to be a bigger problem in small rooms and less of a problem in large outdoor setups.

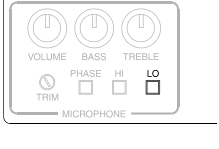
To determine if there is a Phase difference at a new venue, play a sustained note or chord and invert both Phase switches at once. Listen to and compare each position. The proper Phase switch position yields the least low frequency (instrument cavity resonance) feedback.

See Page 21 for more information on Phase.



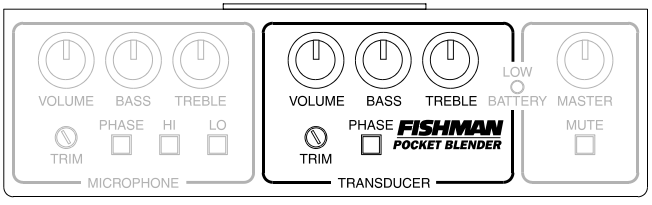
HI CUT SWITCH

Pushing this switch in rolls off the treble frequencies from the MICROPHONE channel. This can be helpful in reducing high frequency feedback.



LO CUT SWITCH

Pushing this switch IN rolls off the bass frequencies from the MICROPHONE channel. This can be helpful in reducing excessive boominess.

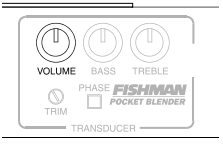


FRONT PANEL

TRANSDUCER CHANNEL

VOLUME CONTROL

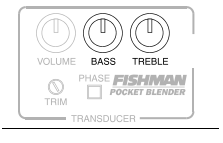
Controls the volume of the TRANSDUCER channel.



BASS AND TREBLE CONTROLS

Controls the BASS and TREBLE for the TRANSDUCER channel.

These are boost/cut shelving tone controls. Setting them at 12:00 yields a flat response.



TRIM CONTROL

Sets the TRANSDUCER channel sensitivity for optimum signal strength before clipping.

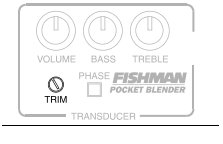
To attain the best signal to noise ratio, start with the control fully clockwise and play your loudest note or chord. If you hear distortion, lower the control with a small slotted screwdriver until the distortion disappears.

The Trim control can also be used to calibrate the MICROPHONE and TRANSDUCER Gain controls. If there is a disparity between the signal strength of the two channels, use the Trim control to "normalize" the levels. Try setting the Trim controls this way.:

1) Set the Master Volume to 3:00.

2) Set the MICROPHONE and TRANSDUCER Channel levels to 12:00.

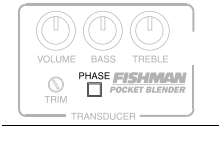
3) Play a note or chord on your instrument and lower the MICROPHONE or TRANSDUCER Trim control until both levels are equal, or are balanced to suit your taste.



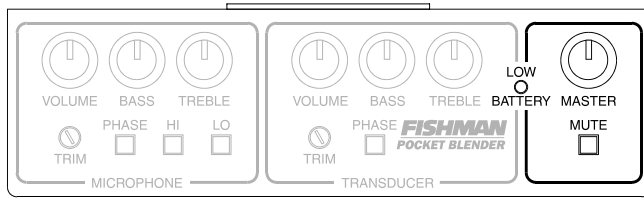
PHASE SWITCHES

Compensate for Phase differences that often occur between instrument, microphone, pickup and speaker.

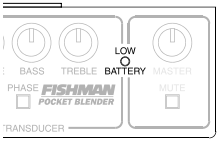
Refer to Page 8 for more information on How to Use the POCKET BLENDER's Phase Switches.



FRONT PANEL

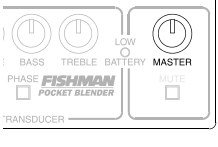


MASTER SECTION



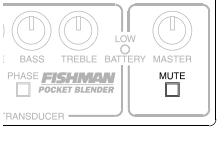
LOW BATTERY INDICATOR

When plugging into the Input of the POCKET BLENDER, The Low Battery LED will flash momentarily, indicating that the power is on. When the Low Battery LED stays on with the Input jack plugged in, it is time to change the battery.



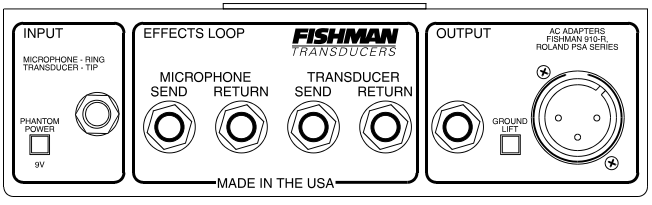
MASTER VOLUME CONTROL

Controls the overall volume of the XLR and 1/4" outputs. The Master Volume does **NOT** affect the level of the MICROPHONE or TRANSDUCER effects sends.



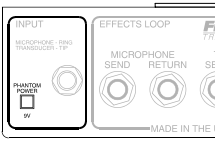
MUTE SWITCH

Shuts off all signals to the Output section and allows you to disconnect your cable from the POCKET BLENDER or from your instrument silently. It does not shut off the signal to the effects sends. You may connect an electronic tuner to the TRANSDUCER Effects Send and tune your instrument in silence with the Mute switch in.



REAR PANEL

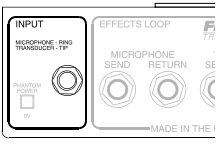
PHANTOM POWER SWITCH



Pushing this switch IN turns the Phantom Power ON.
The IN position provides 9 volts of phantom power to the Ring of the Input jack.

Pushing this switch OUT shuts OFF the Phantom Power. Shut off the Phantom Power when using a dynamic microphone or pickup in the MICROPHONE channel.

INPUT JACK

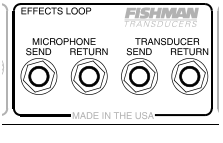


The INPUT jack is a TRS (Tip/Ring/Sleeve) input that can accept two discrete signals through a stereo instrument cable.

Two signals from your instrument (For example: Internal Microphone and Pickup) are routed through a stereo instrument cable to the INPUT jack. The Ring goes to the MICROPHONE channel and the Tip goes to the TRANSDUCER channel.

See Page 3.

EFFECTS LOOPS



The MICROPHONE Effects Loop allows you to interface the MICROPHONE channel signal with outboard effects and signal processors.

The MICROPHONE channel Send is affected by the:

- Bass and Treble controls
- Trim control
- HI cut and LO cut switches
- Phase switch

The MICROPHONE channel Return is affected by the:

- Volume and Master Volume controls
- Mute Switch

The TRANSDUCER Effects Loop allows you to connect the TRANSDUCER channel signal with outboard effects and signal processors. See Page 16.

The TRANSDUCER channel Send is affected by the:

- Bass and Treble controls
- Trim control
- Phase switch

The TRANSDUCER channel Return is affected by the:

- Volume and Master Volume controls
- Phase and Mute switches

EFFECTS LOOP APPLICATIONS

• SENDS

The TRANSDUCER and MICROPHONE Sends by themselves are excellent for use in cases when fixed level signals (regardless of changes in stage level) are needed. Typical applications for the Sends are:

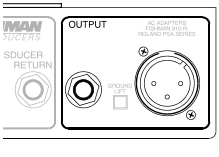
ELECTRONIC TUNER VIA TRANSDUCER SEND
The TRANSDUCER Send provides a strong, clear signal for electronic tuners. Since the TRANSDUCER Send is not affected by the Mute switch, you may tune your instrument with the Outputs to the house system silenced.

LIVE RECORDING OR BROADCAST FEED
Since the Sends are not affected by the Microphone, Transducer or Master Volume controls, a true fixed level DI (via a direct box) can be sent to recording or radio gear. See Page 16.

• RETURNS

The MICROPHONE or TRANSDUCER Returns by themselves can be used as alternative inputs. A signal appearing at one of the Returns will replace the signal appearing at the respective Input of the POCKET BLENDER.

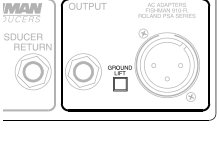
A typical application for a Return would be a CD or tape player replacing the Microphone.



OUTPUTS

The 1/4" Output provides an unbalanced, instrument-level signal of the two channels combined. It is primarily used as a send to an instrument amplifier.

The XLR Output provides a balanced, instrument-level signal of the two channels combined. It is primarily used as a send to a PA or recording console.



GROUND LIFT

Used to eliminate hum that may occur when connecting the POCKET BLENDER to the XLR input of other devices. With the switch pushed in, the ground is lifted from XLR pin #1.

SUGGESTED INPUT OPTIONS

1) INTERNAL MICROPHONE AND PICKUP

Pickup goes to Tip, microphone goes to Ring.

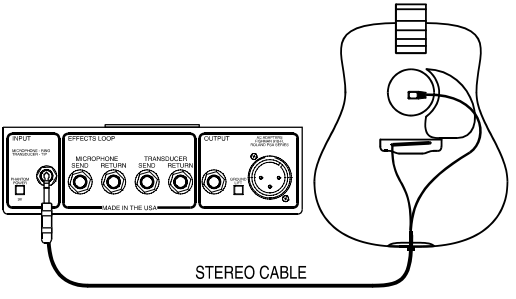
Pickup and microphone signals are routed through a stereo instrument cable to the INPUT jack.

Pickup signal is controlled by TRANSDUCER Channel.

Microphone signal is controlled by MICROPHONE Channel.

The Phantom Power should be turned on (switch pushed IN).

NOTE: If your instrument has an onboard battery, and you want to route microphone and pickup signals through a stereo instrument cable, you may need to install a Fishman SMART SWITCH for the system to operate. See Page 23

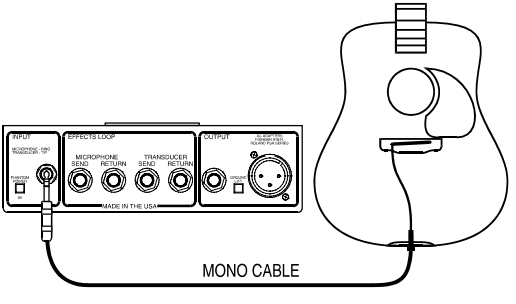


2) PICKUP ALONE

Single pickup is sent through a mono instrument cable to the INPUT jack.

The signal is controlled by the TRANSDUCER Channel.

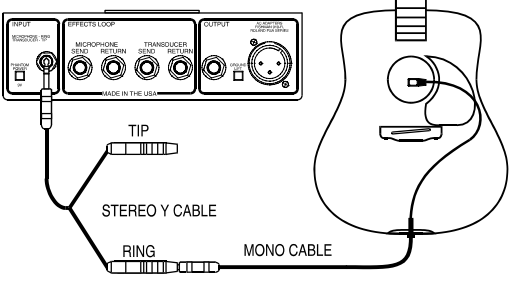
Under battery power, turn the Phantom Power OFF (switch pushed OUT) to save battery life.



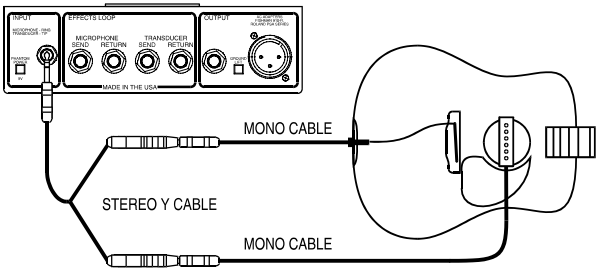
3) MINI-MICROPHONE ALONE

Microphone is sent through a mono instrument cable to the RING jack of a stereo "Y" cable (available from Fishman). The signal is controlled by the MICRO-PHONE channel.

The Phantom Power is ON (switch is IN).



SUGGESTED INPUT OPTIONS, Continued



4) PIEZO AND MAGNETIC PICKUP

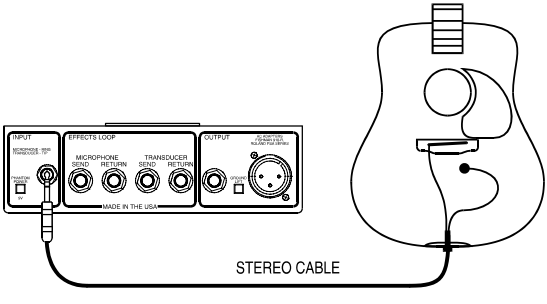
A) Signal from piezo is routed through a mono instrument cable to the TIP jack of a stereo "Y" cable (available from Fishman).

This signal is controlled by the TRANSDUCER channel.

B) Signal from magnetic pickup is sent through a mono instrument cable to the RING jack of a stereo "Y" cable (available from Fishman). This signal is controlled by the MICROPHONE channel.

Phantom Power must be turned OFF (switch is pushed OUT).

NOTE: Both signals may be routed through a stereo instrument cable.



5) UNDER-SADDLE PICKUP AND SURFACE-MOUNT PIEZO PICKUPS

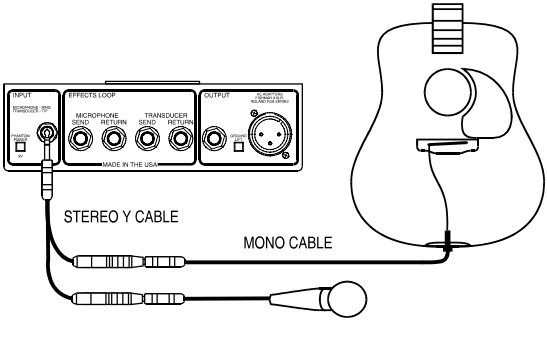
A) Signals from both pickups are sent through a stereo instrument cable to the INPUT jack.

B) Under-saddle pickup signal (TIP) is routed to the TRANSDUCER channel.

C) Surface-mount pickup (RING) is routed to the MICROPHONE channel.

Phantom power is OFF (switch pushed OUT).

NOTE: Both signals may be routed through two mono instrument cables and a stereo "Y" cable.



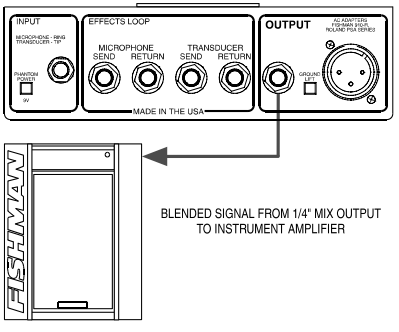
6) PICKUP AND DYNAMIC MICROPHONE

A) Signal from pickup is sent through a mono instrument cable to the TIP jack of a stereo "Y" cable (available from Fishman).

B) Signal from dynamic microphone (possibly for vocals) is sent through a mono instrument cable to the Ring jack of a stereo "Y"cable.

Phantom power is OFF (switch pushed OUT).

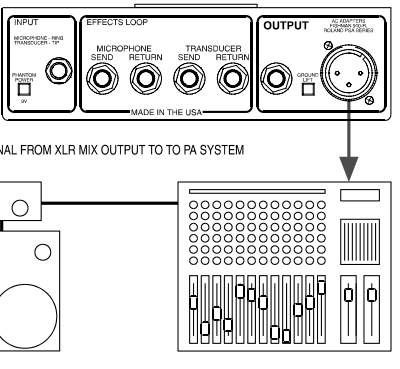
SUGGESTED OUTPUT OPTIONS



1) 1/4" UNBALANCED OUTPUT CONNECTED TO AN INSTRUMENT AMPLIFIER

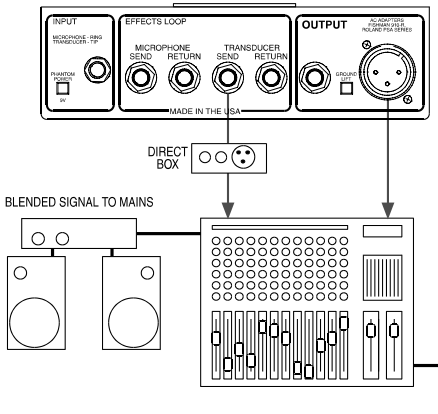
Connect the 1/4" Output to the input of your instrument amplifier.

The amp will see a blended signal of both microphone and pickup.



2) XLR OUTPUT JACK CONNECTED TO PA SYSTEM

Connect the XLR output to the input of your PA system. The PA will see a blended signal of both microphone and pickup. This is a great way to control exactly what the sound-man has to work with and what the audience will hear.



3) XLR AND TRANSDUCER EFFECTS SEND CONNECTED TO PA...TRANSDUCER SENT TO STAGE MONITORS.

Connect the XLR output to the input of your PA system. The house will see a blended signal of both microphone and pickup.

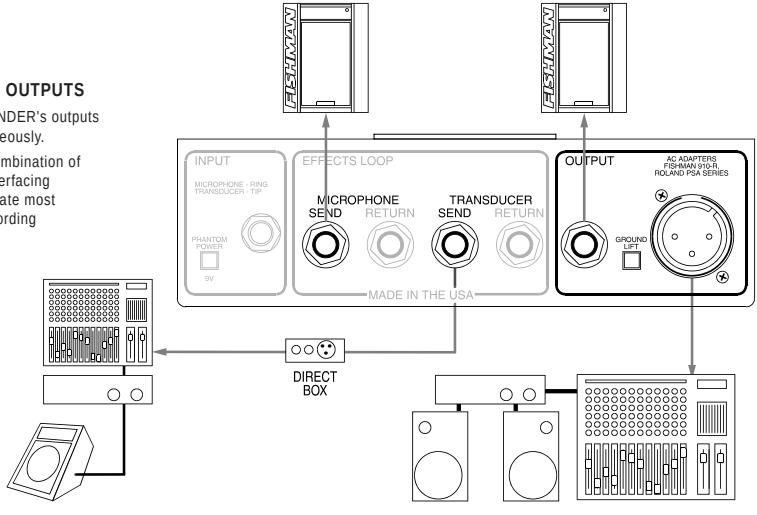
Send only the transducer signal via a direct box to the stage monitors. Having the transducer signal on stage without the microphone signal can help reduce feedback.

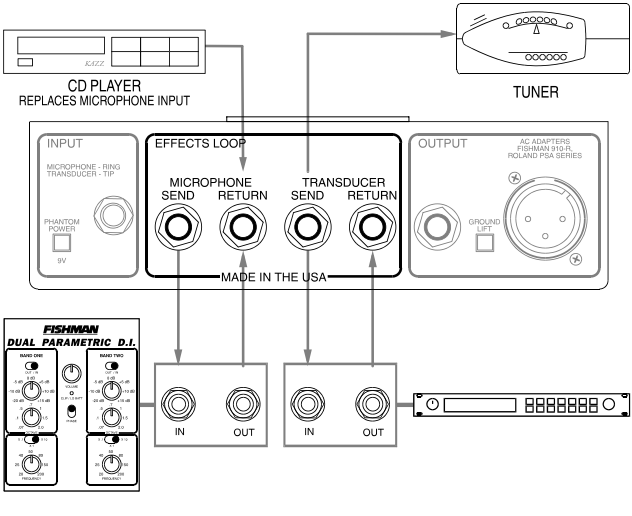
OUTPUTS / EFFECTS

USING MULTIPLE OUTPUTS

All the POCKET BLENDER's outputs can be used simultaneously.

This offers a basic combination of signal routing and interfacing options to accommodate most performance and recording situations.





EFFECTS LOOPS

The POCKET BLENDER has two Effects Loops for Microphone and for Transducer signals. The SENDS can be used as additional outputs. The RETURNS can be used as alternate inputs.

The TRANSDUCER effects send provides a perfect output signal for electronic tuners.

TROUBLESHOOTING

SYMPTOM	TYPICAL CAUSE	SOLUTION
DISTORTED OR NO MICROPHONE SIGNAL WITH ACTIVE PICKUP (BATTERY ON INSTRUMENT)	MICROPHONE IS GROUNDED-OUT BY THE INSTRUMENT'S ONBOARD PREAMP	INSTALL A FISHMAN SMART SWITCH OR USE SEPARATE CABLES FOR MICROPHONE AND PICKUP
NO SIGNAL WITH BATTERY POWER	**MUTE** SWITCH IN	SET **MUTE** SWITCH TO OUT POSITION
	LOOSE BATTERY COMPARTMENT TERMINALS	REMOVE BATTERY AND RE-TENSION TERMINALS BY PULLING THEM UP WITH YOUR FINGER
	DEVICE APPEARING AT **MIX EFFECTS RETURN** IS BREAKING THE SIGNAL PATH	REMOVE PLUG FROM **EFFECTS RETURN**
NO SIGNAL WITH AC POWER	**MUTE** SWITCH IN	SET **MUTE** SWITCH TO OUT POSITION
	DEVICE APPEARING AT **MIX EFFECTS RETURN** IS BREAKING THE SIGNAL PATH	REMOVE PLUG FROM **EFFECTS RETURN**
MICROPHONE CHANNEL DEAD WITH MINI-MICROPHONE CONNECTED TO **INPUT** JACK	PHANTOM POWER IS OFF (SWITCH IS **OUT**)	TURN PHANTOM POWER ON (SWITCH IS **IN**)
	DEVICE APPEARING AT THE **MICROPHONE EFFECTS RETURN** IS BREAKING THE SIGNAL PATH	REMOVE PLUG FROM THE **MICROPHONE EFFECTS RETURN**
MICROPHONE IS DEAD AND PICKUP APPEARS IN MICROPHONE CHANNEL	MICROPHONE AND PICKUP ARE WIRED TO STEREO OUTPUT JACK BACKWARDS (MICROPHONE TO TIP AND PICKUP TO RING)	WIRE PICKUP TO TIP AND MICROPHONE TO RING OF STEREO OUTPUT JACK
NOISE OR DISTORTION FROM EITHER CHANNEL	LOW BATTERY	WHEN LOW BATTERY LED STAYS ON WITH INPUT JACK PLUGGED IN, IT IS TIME TO CHANGE THE BATTERY
	TRIM CONTROL(S) SET TOO HIGH	LOWER **TRIM** CONTROL(S) UNTIL DISTORTION DISAPPEARS
	MECHANICAL NOISE FROM INSTRUMENT	LISTEN TO INSTRUMENT ACOUSTICALLY TO ISOLATE NOISE
	MECHANICAL NOISE FROM INSTRUMENT CABLE	TIGHTEN ALL PLUG HARDWARE
DISTORTION FROM EXTREMELY 'HOT' SIGNALS SUCH AS EXTERNAL PICKUP	INPUT CLIPS WITH **TRIM** CONTROL ALL THE WAY DOWN	CONSULT **FISHMAN** TECH SUPPORT LINE AT 978-988-9665
HUM	AN UNREGULATED POWER SUPPLY WILL CAUSE THE POCKET BLENDER TO HUM UNDER AC POWER	USE **ONLY** FISHMAN 910-R OR ROLAND PSA SERIES AC ADAPTERS
	POORLY SHIELDED OR UNSHIELDED CABLE	USE ONLY QUALITY FULLY SHIELDED INSTRUMENT CABLES
PIEZO HIGH FREQUENCY LOSS	INSTRUMENT CABLE IS TOO LONG	USE ONLY 15' OR SHORTER INSTRUMENT CABLES WITH PASSIVE PICKUP

OPTIONAL ACCESSORIES

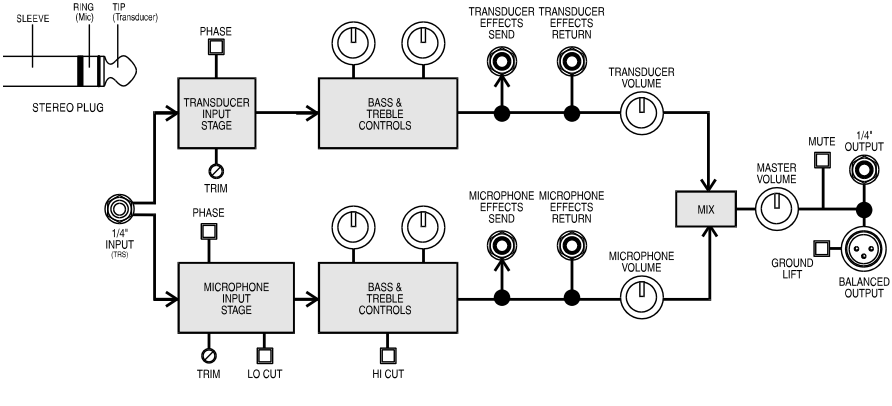
- **A/C ADAPTER:** FISHMAN 910-R regulated 9V power supply.
- **CROWN GLM-200 MINI-MICROPHONE:** Ships without jack; ready to be wired to the jack of your choice. Soldering and assembly required.
- **UNIVERSAL MICROPHONE MOUNT:** Allows you to mount a mini-microphone to your instrument.
- **INTERNAL MICROPHONE MOUNT:** Allows you to mount a mini-microphone to the X-brace of your guitar.
- **GUITAR MICROPHONE ASSEMBLY:** Mounts to the X-brace of your guitar. Includes a mini-microphone, internal microphone mount and stereo endpin jack. Soldering and assembly required.
- **BASS MICROPHONE ASSEMBLY:** Mounts to the bridge foot of an acoustic bass. Includes pre-wired mini-microphone, microphone mount and a stereo bass jack.
- **STEREO ENDPIN JACK**
- **STEREO BASS JACK:** Mounts on the A and D strings between bridge and tailpiece.
- **TRANSDUCERS:** We make a full line of quality transducers for many types of acoustic stringed instruments.
- **BP-100-M:** Bass pickup and mini-microphone pre-wired to stereo bass jack.
- **V-200-M:** Violin pickup and mini-microphone pre-wired to a Carpenter-style output jack.
- **MICROPHONE STAND ADAPTER:** Allows you to mount the POCKET BLENDER on any Microphone stand.
- **15" STEREO CABLE**
- **PADDED CARRY BAG**
- **STEREO Y CABLE:** 1/4" stereo male to (2) 1/4" mono female.
- **SMART SWITCH:** If your instrument has an onboard battery, and you want to route microphone and pickup signals through a stereo instrument cable, you may need to install a Fishman SMART SWITCH for the system to operate. See Page 23

SPECIFICATIONS

Nominal Input Level:	-20 dBV
Input Overload:	(20Hz-20kHz) -8 dBV
Input Stage Impedance:	Transducer: 10 M Ohms Microphone without phantom power: 1.0 M Ohm Microphone with phantom power: 10 k Ohms
Phantom Power:	9 Volts, .5 mA
Output Type:	Electronically balanced XLR and unbalanced 1/4"
Output Impedance:	XLR: 220 Ohms 1/4": 1 k Ohms
Nominal Output Level:	-11 dBV
Output Overload:	(600 Ohm load) 14 dBV
Effects Loop Nominal Levels:	Transducer channel: -3.5 dBV Microphone channel: -3.0 dBV
Effects Loop Send Impedance:	1 k Ohm
Return Impedance:	23 k Ohms
Bass Control Range:	± 8 dB shelving
Treble Control Range:	± 13 dB shelving
Front Panel Trim Gain Range:	16 dB
Overall THD:	.07% @ 1 kHz, -14 dBV input
Overall Dynamic Range:	110 dB
Signal to Noise Range:	87 dB (A-weighted, referred to nominal -20 dBV input)
Dual Power Supply:	9 volt regulated, or single 9 volt battery (estimated 60 hours continuous use)
Dimensions:	6.75" x 2" x 3"
Weight:	1 lb 2 oz

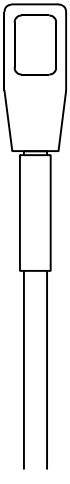
All specifications subject to change without notice

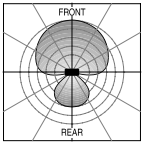
BLOCK DIAGRAM



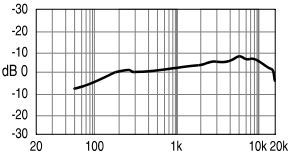
APPENDIX I: MICROPHONE

GLM-200





GLM-200
RESPONSE PATTERN



GLM-200
FREQUENCY RESPONSE CURVE

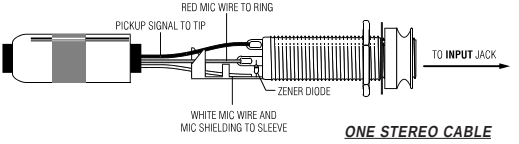
A variety of microphones can be used with the POCKET BLENDER. However, the Crown GLM-200 is Fishman's microphone of choice for the BLENDER system. It is a mini-electret condenser microphone with a hyper-cardioid response pattern. Its high SPL rating (130 dB), small size and crystal clear "rising" frequency response make it ideal for close mic'ing acoustic stringed instruments. Fishman offers the GLM-200 optimized specifically for use with the BLENDER System.

The POCKET BLENDER provides 9 Volts of Phantom power to the GLM- 200 via the microphone channel. Phantom Power is sent through the Ring of the INPUT jack.

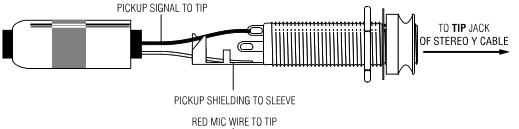
A small Zener diode is included with the GLM-200 microphone. It is pre-wired to both the Bass and Violin jack assemblies (BP-100-M, BMA, V-200-M). It is included separately with all other kits. It will prevent harmful electric spikes from damaging the microphone.

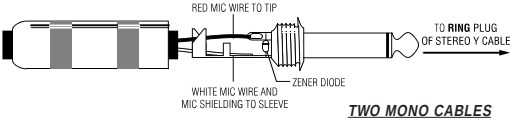
NOTE: The Zener diode MUST be wired to the output of the GLM-200. Microphones installed without the Zener diode are not covered under warranty. However, the Zener diode is not needed when a smart switch is installed.

ACTUAL
SIZE



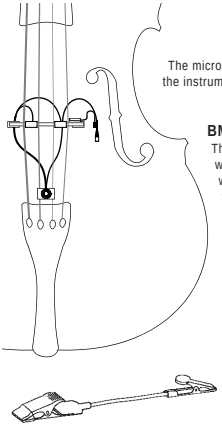
ONE STEREO CABLE





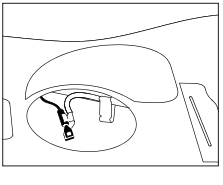
TWO MONO CABLES

The GLM-200's small size allows it to be conveniently mounted in or outside the sound chamber of most stringed instruments. The microphone, with a (TRS) stereo jack included, can be attached to the instrument using one of the following mounting systems:



GMA - GUITAR MICROPHONE ASSEMBLY

The microphone is mounted in the sound hole with a clip that attaches to the X-brace under the instrument's soundboard. The jack is run through the instrument's endpin hole. Soldering and some assembly is required.

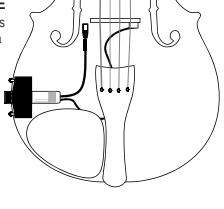


BMA - BASS MICROPHONE ASSEMBLY

The microphone is held in a isolation collar to reduce low frequency microphonics which are common with bowed instruments. The mount attaches to a bridge foot with an adhesive-backed nylon clip. The jack (pre-wired to Tip) mounts between the A&D strings. . Also available with a pre-wired pickup (BP-100-M).

V-200-M - PICKUP AND MINI-MICROPHONE

The microphone is held in an isolation collar to reduce low frequency microphonics which are common with bowed instruments. The mount is integrated into a Carpenter-style jack that attaches above the instrument's chin rest.



UNIVERSAL MICROPHONE MOUNT

For mandolin, banjo, dulcimer, harp. A small alligator clip at one end holds the microphone. At the other end, a set of firm-gripping rubber-covered jaws attach to the instrument's housing.

APPENDIX I: MICROPHONE Continued

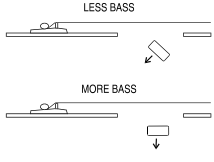
USING OTHER MICROPHONES

The POCKET BLENDER is also compatible with other manufacturers' mini-electret microphones. Consult the manufacturer for specific minimum power requirements, wiring configuration and instrument mounting systems (the Fishman microphone mounts are dedicated to the Crown GLM series).

Dynamic microphones (such as the SM 58) may be used with the POCKET BLENDER. You'll need a low to high impedance adapter plugged into the Ring jack of a stereo "Y" cable. Turn off the Phantom Power (switch is out) for this application.

POSITIONING THE MICROPHONE

It's worth taking the time to experiment with the placement of the Crown GLM-200. Here are some suggestions to help you get started:



INTERNALLY MOUNTED MICROPHONE (flat top guitars) Start with the microphone centered in the soundhole, slightly below the top. Position the face of the microphone (marked "FRONT") toward the sound chamber of the instrument. Tilting the microphone as much as 90 degrees may help reduce boominess.

EXTERNALLY MOUNTED MICROPHONE (violin, bass, cello, f-hole mandolin, arch-top guitar). Start with the microphone centered halfway between a bridge foot and F-hole. Position the face of the microphone (marked front) towards the instrument. Tilting the microphone as much as 90 degrees may help reduce boominess. Placing the microphone directly over an F-hole will produce a deep, woody tone. However, the microphone will feedback at the instrument's cavity resonance. This can be easily remedied by notching out the feedback with an external equalizer (see below). Placing the microphone over the soundboard will produce a tight, focused tone with more midrange emphasis but less overall volume.

ADDRESSING FEEDBACK

LOW FREQUENCY CAVITY RESONANCE

All stringed instruments' sound chambers are tuned to resonate at an optimum frequency, in the instrument's lowest octave. Placing a microphone directly over the opening of the instrument may result in feedback at this "cavity resonance".

Typical resonances are:

Guitar; 95-105 Hz	Bass; 65-75 Hz
Violin; 275-300 Hz	Cello; 125-135 Hz

To address Cavity Resonance Feedback:

1) POSITION THE MICROPHONE away from the opening on non-flat-top instruments. This works well in low volume settings.

2) TURN DOWN BASS CONTROL on MICROPHONE channel.

3) PUSH IN BASS CUT SWITCH on MICROPHONE channel.

4) INVERT PHASE SWITCHES on both channels. See Pages 8 & 21

5) OUTBOARD EQUALIZATION: This works well in higher volume settings. An external equalizer (such as the FISHMAN Dual Parametric D.I.) may be used through the BLENDER's MICROPHONE channel EFFECTS LOOP. See FIG. 1 See Page 16

a. PARAMETRIC EQ: We suggest cutting 5 dB at the instrument's cavity resonance with a .5 octave bandwidth (Q).

b. GRAPHIC EQ (although less precise and much noisier) may also be used. Cut 5 dB at the instrument's cavity resonance with 1/3 octave cuts on either side of the center frequency.

HIGH FREQUENCY FEEDBACK

Occurs when the microphone's rising response creates a feedback loop with a high frequency driver in your speaker system. This feedback usually starts above 1.5 kHz, peaks at 4 kHz and subsides at 9 kHz. There are several approaches to minimizing HIGH FREQUENCY FEEDBACK:

1) STRATEGIC POSITIONING: This works best in low to medium volume settings. The simplest solution for this type of feedback is to keep the microphone out of the path of the loudspeaker.

You can do this by:

a. Avoid standing directly in front of your amp.

b. Send separate MIX and TRANSDUCER signals to your soundman and have only the TRANSDUCER signal sent to your stage monitor.

2) TURN DOWN TREBLE CONTROL on MICROPHONE channel.

3) REVERSE PHASE SWITCHES on both channels.

4) OUTBOARD EQUALIZATION: This works well in higher volume settings. An external equalizer (such as the FISHMAN Dual Parametric D.I.) may be used through the POCKET BLENDER's MICROPHONE channel EFFECTS LOOP. See FIG. 2

a. Parametric EQ: We suggest cutting 5 dB at 4 kHz, with a 1.5 octave bandwidth (Q).

b. GRAPHIC EQ (although less precise and much noisier) may also be used. Cut 3 dB at 1.2 kHz. Gradually increase the amount of cut to -9 dB at 4-5 kHz. Above 5 kHz, gradually decrease the amount of cut to -3 dB at 10 kHz.

FIG. 1

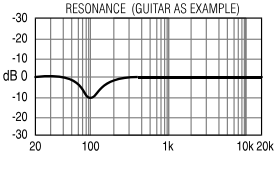
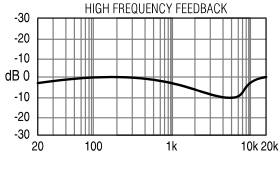
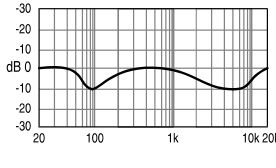


FIG. 2





APPENDIX II: PHASE

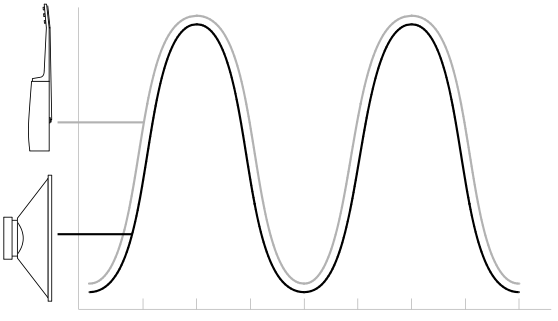
WHAT IS PHASE?

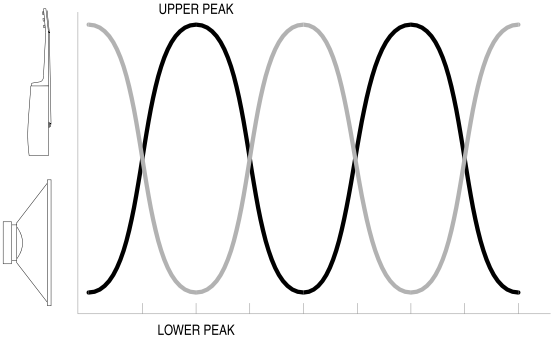
Phase is the relationship between two signals or sound waves, originating from the same instrument.

For our purposes, Phase relationships are expressed as being either "in phase" or "out of phase". *In phase* tends to enhance, while *out of phase* tends to suppress the natural characteristics of an instrument. A simple way to determine the quality of Phase (in or out) of two sounds is to compare phase switch settings at low volumes.

IN PHASE

In phase is when the waveforms of two signals or sounds originating from the same instrument are similarly aligned in time. Similar phase is like looking at yourself in a mirror; your reflection directly follows your movement.





OUT OF PHASE

out of phase is when the waveforms of two signals or sounds originating from the same instrument are aligned such that the upper peak of one wave occurs at the same moment in time as the lower peak of the other. *Out of phase* is like looking at yourself in a live video monitor; the image you see is similar, but the perspective is shifted. When you move to the right, the image appears to move to your left.

WHAT ARE THE POCKET BLENDER'S PHASE SWITCHES FOR?

The phase switches are useful for two reasons:

A. Due to the interactive and changing nature of phase, acoustic amplification depends on maintaining optimum phase relationships between amplified instruments, sound systems and venues.

B. Since an industry standard for polarity has never been established for all sound equipment, the phase switches compensate for any unintentional phase differences that might occur between components.

APPLICATIONS

When amplifying acoustic instruments with a microphone/pickup combination, there are two crucial phase relationships:

ACOUSTIC PHASE - The relationship between the sound waves of a mic'ed acoustic instrument and the speaker system.

ELECTRONIC PHASE - The relationship between pickup and microphone signals.

APPENDIX II: PHASE Continued

1. ACOUSTIC PHASE

In any situation where the mic'ed instrument faces a loudspeaker, there will be an interactive phase relationship between the two. This usually occurs with stage amps, side fill and floor monitors at close distances.

LOW VOLUME AMPLIFICATION

At low volumes, when a mic'ed instrument and speaker are at similar levels and are *in phase,* the sound is full and solid, with the lower frequencies emphasized.

When a mic'ed instrument and speaker are *out of phase* at low levels, the bass frequencies cancel out to some extent. The resulting sound is somewhat unnatural and unbalanced compared to *in phase.*

HIGH VOLUME LEVELS

At high volume levels, when a mic'ed instrument and speaker are *in phase,* the sound pressure from the speaker will excite the instrument's sound chamber, creating a feedback loop at the instrument's lowest octave. This "cavity resonance" feedback can be dealt with by putting the mic'ed instrument and speaker *out of phase* or by adding outboard equalization.

A. PUTTING THE CAVITY RESONANCE OUT OF PHASE TO REDUCE FEEDBACK.

Inverting the MICROPHONE channel PHASE switch will put the mic'ed instrument and speaker *out of phase* with each other, cancelling the low frequency feedback (not recommended for bass instruments).

If you move from your position on stage more than a few feet, you may have to invert the phase switch again to maintain an out of phase relationship between the mic'ed instrument and speaker. Here's why:

A typical guitar has a cavity resonance of about 100 Hz. This is the frequency that generally feeds back when a mic'ed guitar and speaker are *in phase.* 100 Hz has a wavelength of about 11 feet. Phase inverts 180 degrees for every 1/2 a frequency's wavelength. In this case, 1/2 the wavelength is about 5 1/2 feet.

If you set your MICROPHONE channel PHASE switch to eliminate cavity resonance (*out of phase*) and then move 5 1/2 feet towards or away from the speaker, you will effectively put the mic'ed guitar/speaker relationship at 100 Hz back *in phase;* in the line of fire for low frequency feedback.

B. USING AN OUTBOARD EQUALIZER TO REDUCE FEEDBACK

Notching out instrument cavity resonance with an outboard equalizer patched through the Microphone channel effects loop (See Page 20) will eliminate the low frequency feedback problem completely. The advantages to using notching equalization are:

- The physical distance from the speaker will no longer be a factor for potential low frequency feedback.
- The mic'ed instrument/speaker can remain *in phase*, maintaining a more natural and balanced response.

This is the preferred method for bass, since the mic'ed instrument and speaker can remain *in phase*, preserving low frequency content.

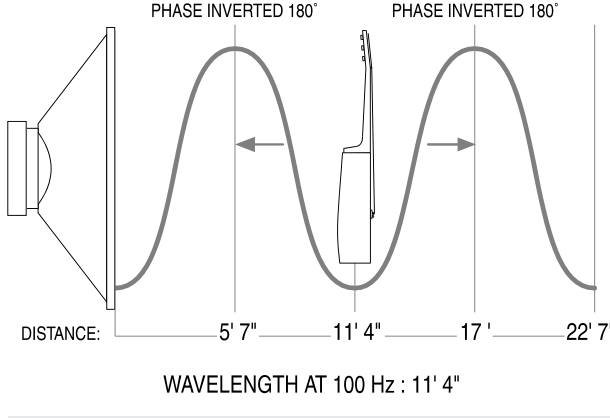
2. ELECTRONIC PHASE

Once the mic'ed instrument is phase aligned with the sound system, the pickup signal can be added.

When a microphone and pickup are at similar levels and are *in phase*, the sound is full and solid, with the lower frequencies emphasized.

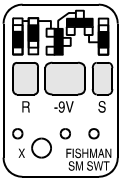
When a microphone and pickup are *out of phase*, the bass frequencies cancel out to some extent. The resulting sound is somewhat unnatural and unbalanced compared to *in phase.*

It is especially important for the microphone and pickup to be *in phase* when recording to attain the fullest and most natural sound.



The PHASE switch on the BLENDER's MICROPHONE channel in effect electronically "moves" your instrument's position relative to the speaker by inverting the phase 180 degrees every time you flip it.

APPENDIX III: SMART SWITCH



ACTUAL SIZE

If your instrument has an active pickup/preamp and you are going to route electret microphone and pickup signals through a single stereo cable, you may need to install a SMART SWITCH for the system to operate.

WHAT IS A SMART SWITCH?

The SMART SWITCH is a voltage sensing electronic switch. A SMART SWITCH must be installed with certain pickup/preamp/microphone configurations due to the physical limitations of the stereo (TRS) jack used on the instrument.

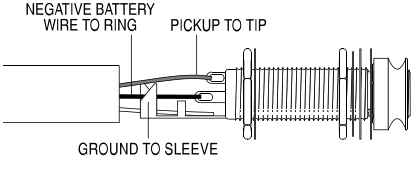
WHY DO I NEED A SMART SWITCH?

Most instrument mounted preamps have no on-off switch. Instead, they rely on a "switching" stereo jack that turns the preamp on when a 1/4" plug is inserted. The actual switching is performed by the plug: it shorts the negative battery wire (RING connection) to ground. Similar in function to the input jack on a "stomp box" pedal, the switching jack can extend battery life since the preamp is turned off with the plug removed. The standard wiring configuration is as follows:

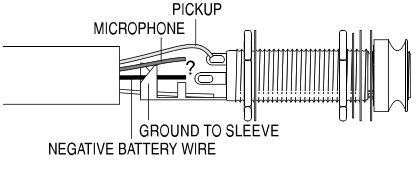
TIP = Pickup Signal

RING = Negative Battery Wire

SLEEVE = Ground



Adding the Fishman/Crown GLM-200 microphone to a switching jack configuration creates an electronic version of musical chairs in which the microphone signal and negative battery wire are both vying for the same RING terminal on the stereo jack. Attempting to connect both the Microphone and Battery wire to the RING terminal will ground out the microphone.



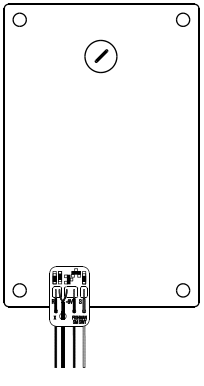
WHAT DOES THE SMART SWITCH DO?

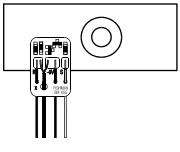
The Smart Switch takes over the preamp power switching duty and frees up the RING terminal on the output jack for the microphone signal. The Smart Switch takes its cue by electronically sensing phantom power, sent from the Blender and in turn switching on the preamp.

In cases where the microphone is not needed, the Smart Switch will know to turn on the preamp with a mono phone plug inserted. Pretty smart, eh?

WHO NEEDS A SMART SWITCH?

The following Fishman pickup/preamp systems will require a SMART SWITCH to be installed in conjunction with the Fishman/Crown GLM- 200 Microphone:

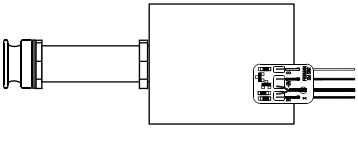




AGP-2 and ABGP Onboard Guitar Preamps

Acoustic MATRIX Professional System

Acoustic MATRIX Natural
Acoustic MATRIX Hot



Other manufacturers' preamps may also require a SMART SWITCH. Contact the Fishman's PRODUCT INFORMATION LINE at 978-988-9665 for assistance.

NOTE: The SMART SWITCH is NOT required when using a Fishman POWERJACK endpin preamp in conjunction with the Fishman/Crown GLM 200 microphone.

LIMITED WARRANTY

The **FISHMAN POCKET BLENDER** is warranted to function for a period of One (1) Year from the date of purchase. If the unit fails to function properly within the warranty period, free repair and the option of replacement or refund in the event that FISHMAN TRANSDUCERS is unable to make repair are FISHMAN TRANSDUCERS' only obligations. This warranty does not cover any consequential damages or damage to the unit due to misuse, accident, or neglect. FISHMAN TRANSDUCERS retains the right to make such determination on the basis of factory inspection. Products returned to FISHMAN TRANSDUCERS for repair or replacement must be shipped in accordance with the Return Policy, as follows. This warranty remains valid only if repairs are performed by FISHMAN TRANSDUCERS. This warranty gives you specific legal rights and you may also have other rights which may vary from state to state.

RETURN POLICY

To return products to FISHMAN TRANSDUCERS, you must follow these steps...

1) Call FISHMAN TRANSDUCERS at 978-988-9199 for a Return Authorization number.

2) Enclose a copy of the original Bill of Sale as evidence of the date of purchase, with the product in its original packaging and a protective carton or mailer.

3) Clearly label the outside of the shipping carton with the Return Authorization number.

4) Ship the carton prepaid to:

FISHMAN TRANSDUCERS

340-D FORDHAM ROAD WILMINGTON MA 01887 USA

PHONE 978 - 988 - 9199 FAX 978 - 988 - 0770

www.fishman.com

MODEL # _____

SERIAL # _____

DEALER _____

_____

DATE OF PURCHASE _____

9-97

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